AIR QUALITY TECHNICAL ADDENDUM

STATE ROUTE 241 (SR-241) TESORO EXTENSION PROJECT (ORA052)

ORANGE COUNTY, CALIFORNIA

$PM_{2.5}$ AND PM_{10} ANALYSIS

12-ORA-241 PM 9.8/14.6

EA: 11102

Submitted to:

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October 2012

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INTRODUCTION

LSA Associates, Inc. (LSA) prepared this $PM_{2.5}$[1] and PM_{10}[2] Hot-Spot Analysis Air Quality Technical Addendum for the State Route 241 (SR-241) Tesoro Extension Project according to the conformity regulations (40 Code of Federal Regulations [CFR] 93.116 and 123 as of January 10, 2012) and the United States Environmental Protection Agency (EPA) guidance for PM[3] hotspot analysis of 2006 and 2010.

This $PM_{2.5}$ and PM_{10} Technical Addendum for a portion of SR-241 – the Tesoro Extension – includes the following components identified in the Regional Transportation Plan (RTP) and the Federal Transportation Improvement Program (FTIP): Project ID: ORA052, Description: FTC-S, I-5 to Oso Parkway, 15 miles, 2 mixed flow lanes in each direction by 2013; and additional mixed flow in each direction plus climbing and auxiliary lanes as required by 2030 per SCAG/TCA.

This project has previously been analyzed as part of ORA052, which completed interagency consultation and met conformity requirements in July 2006. As described in further detail below, this addendum provides additional public information on the hot spot performance of the Tesoro Extension in isolation. The conclusion section of this report provides a comparison of the original conformity findings for ORA052 with the findings for the Tesoro Extension portion only.

PROJECT LOCATION AND DESCRIPTION

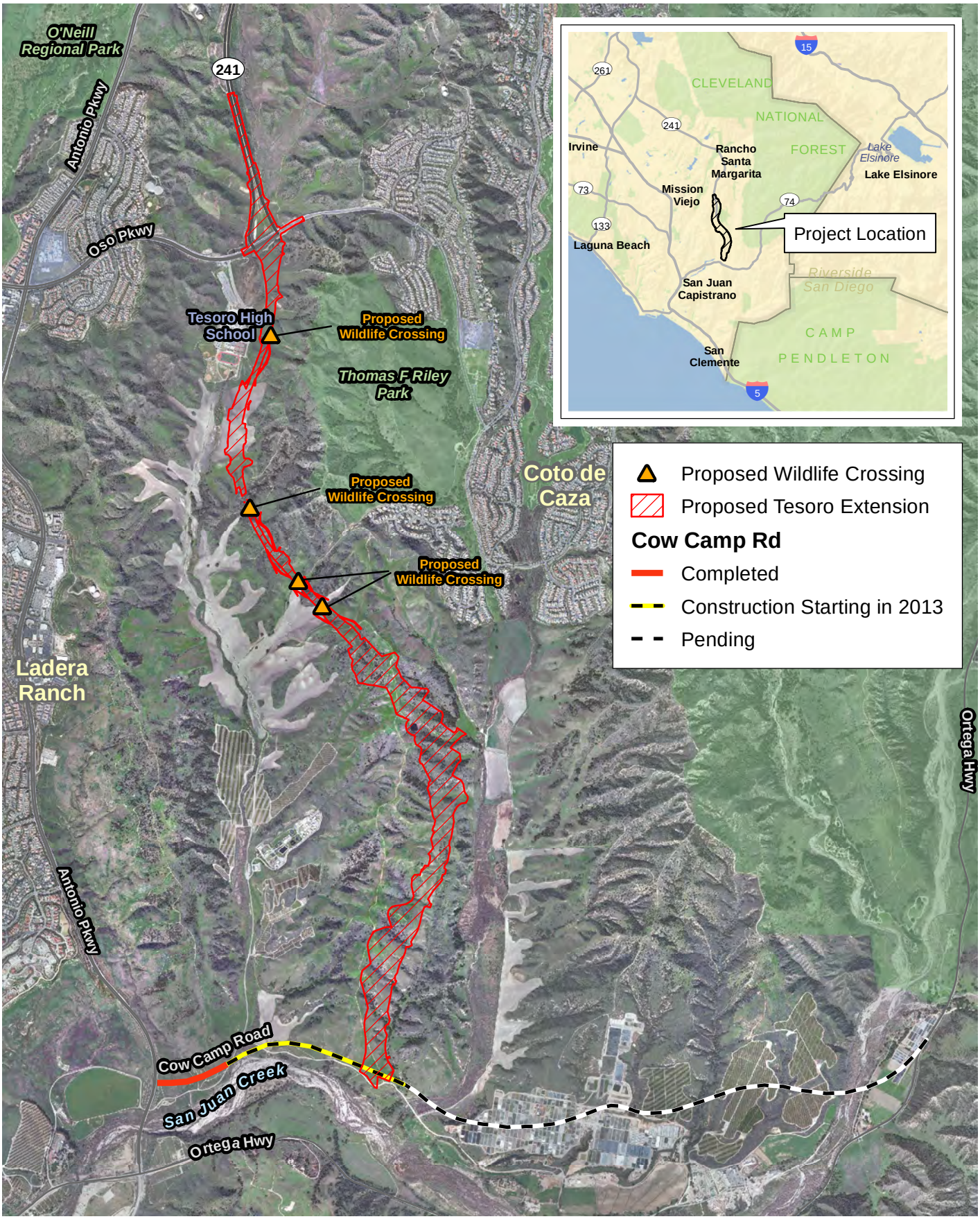
The U.S. Federal Highway Administration (FHWA), in cooperation with the Foothill/Eastern Transportation Corridor Agency (F/ETCA), proposes to construct an approximately 5.5-mile long extension of the existing SR-241 from its current terminus at Oso Parkway to Cow Camp Road (ORA082401) immediately north of State Route 74 (SR-74) in Orange County (County). The project location is shown in Figure 1.

The Project includes four general-purpose travel lanes, two in each direction. The center median, from Oso Parkway to Cow Camp Road, will be revegetated with a native seed mix and will include some drainage improvements, similar to the median along the existing SR-241. The median offers future opportunities for bus rapid transit, light rail, or additional lanes as traffic conditions warrant.

Purpose and Need

Purpose. The purpose of the proposed project is to provide a transportation facility that will reduce existing and forecast deficiencies and congestion on Interstate 5 (I-5) and the arterial network in South Orange County. The proposed project will enhance accessibility to the regional transportation system for local (existing and future with The Rancho Mission Viejo [RMV] Ranch Plan development [Ranch Plan]) as well as intra- and inter-regional trips. Between South Orange County and Northern Orange County or Riverside County, commuters will be able to begin or extend their

[1] Particulate matter less than 2.5 microns in diameter.
[2] Particulate matter less than 10 microns in diameter.
[3] Particulate matter



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Regional Location and Local Vicinity

Figure 1

Tesoro Extension Project

N W E S

3,500 1,750 0 3,500 Feet

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trip on the SR-241 an additional 5.5 miles, avoiding congested conditions on I-5 and reducing congestion, including during peak hours, on the I-5 and arterials connecting to the I-5.

The purpose of the proposed project is also to implement a major component of the County of Orange Master Plan of Arterial Highways (MPAH) and the Transportation Element of the County of OrangeGeneral Plan. The proposed project will reduce an existing gap in the Orange County arterial highway system, providing an alternative to I-5.

Need. The need for the proposed project is illustrated by the existing congested and over-capacity conditions on I-5 and arterials that cross I-5 in South Orange County. Specifically, the 2035 peak hour intersection analysis shows a number of intersections in the study area that will operate at more efficient levels of service, with less traffic when the proposed project is complete. By initiating the Project at this time, the traffic benefits would begin in 2013, providing an alternative to I-5, reducing congestion and improving emergency access and evacuation. The need for the proposed project is further demonstrated by the existing development patterns and the approved Ranch Plan development, presently under construction. Increases in projected traffic demand between now and 2035, the long-range forecast year, are based on adopted plans and forecasts of the Southern California Association of Governments for this region.

$PM_{2.5}$ AND PM_{10} HOT-SPOT METHODOLOGY

The transportation conformity regulation establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. The proposed project is in the South Coast Air Basin (Basin), which has been designated as a Federal nonattainment area for $PM_{2.5}$ and PM_{10}; therefore, a hot-spot analysis is required.

A hot-spot analysis is defined in 40 CFR 93.101 as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area, such as for congested roadway intersections and highways or transit terminals. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act (CAA) conformity requirements to support State and local air quality goals with respect to potential localized air quality impacts. When a hot-spot analysis is required, it is included within the project-level conformity determination that is made by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA).

Section 176(c)(1)(B) of the CAA is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity.
Section 176(c)(1)(B) states that federally supported transportation projects must not "cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."

National Ambient Air Quality Standards

$PM_{2.5}$ nonattainment and maintenance areas are required to attain and maintain two national ambient air quality standards (NAAQS):

- **24-hour Standard:** 35 micrograms per cubic meter ($\mu g/m^3$).
- **Annual Standard:** 15.0 $\mu g/m^3$

The current 24-hour standard is based on a 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations. The current annual standard is based on a 3-year average of annual mean $PM_{2.5}$ concentrations. A $PM_{2.5}$ hot-spot analysis must consider both standards unless it is determined for a given area in which meeting the controlling standard would ensure that CAA requirements are met for both standards. The interagency consultation process should be used to discuss how the qualitative $PM_{2.5}$ hot-spot analysis meets statutory and regulatory requirements for both $PM_{2.5}$ standards, depending on the factors that are evaluated for a given project.

PM_{10} nonattainment and maintenance areas are required to attain the following standard:

- **24-hour Standard:** 150 $\mu g/m^3$

The 24-hour PM_{10} standard is attained when the average number of exceedances in the previous 3 calendar years is less than or equal to 1.0. An exceedance occurs when a 24-hour concentration of 155 $\mu g/m^3$ or greater is measured at a site. The annual PM_{10} standard of 50 $\mu g/m^3$ is no longer used for determining the Federal attainment status. The interagency consultation process should be used to discuss how the qualitative PM_{10} hot-spot analysis meets statutory and regulatory requirements for the PM_{10} standards, depending on the factors that are evaluated for a given project.

To meet statutory requirements, the transportation conformity regulation requires $PM_{2.5}$ and PM_{10} hot-spot analyses to be conducted for Projects of Air Quality Concern (POAQC). The transportation conformity regulation states that projects not identified in 40 CFR 93.123(b)(1) as POAQC have met statutory requirements without any further hot-spot analyses (40 CFR 93.116[a]).

$PM_{2.5}$ AND PM_{10} HOT-SPOT ANALYSIS

Projects of Air Quality Concern

The first step in the hot-spot analysis is to determine whether a project meets the standard for a POAQC. The EPA specified in 40 CFR 93.123(b)(1) of the transportation conformity regulation that POAQC are certain highway and transit projects that involve significant levels of diesel vehicle traffic, or any other project that is identified in the $PM_{2.5}$ and PM_{10} State Implementation Plan (SIP) as a localized air quality concern. The transportation conformity regulation defines the POAQC that require a $PM_{2.5}$ and PM_{10} hot-spot analysis in 40 CFR 93.123(b)(1) as:

i. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

ii. Projects affecting intersections that are at LOS (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F

because of increased traffic volumes from a significant number of diesel vehicles related to the project;

iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; or

v. Projects in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

At the request of the Transportation Conformity Working Group (TCWG), a detailed qualitative PM Conformity Hot Spot Analysis for the entire Foothill Transportation Corridor South (FTC-S) Project was presented to the Southern California Association of Governments' (SCAG) TCWG on July 25, 2006. The TCWG determined that the conformity analysis was acceptable for NEPA circulation. As the proposed project is a portion of the FTC-S, a qualitative project-level $PM_{2.5}$ and PM_{10} hot-spot analysis has been conducted to assess whether the project would cause or contribute to any new localized $PM_{2.5}$ or PM_{10} violations, increase the frequency or severity of any existing violations, or delay timely attainment of the $PM_{2.5}$ and PM_{10} NAAQS.

Types of Emissions Considered

In accordance with the EPA/FHWA Guidance, this hot-spot analysis is based on directly emitted and reentrained $PM_{2.5}$ and PM_{10} emissions. Tailpipe, brake wear, tire wear, and road dust $PM_{2.5}$ and PM_{10} emissions were considered in this hot-spot analysis.

Vehicles cause dust from paved and unpaved roads to be reentrained, or resuspended, in the atmosphere. According to the transportation conformity regulation, road dust emissions are to be considered for PM_{10} hot-spot analyses. For $PM_{2.5}$, road dust emissions are only to be considered in hot-spot analyses if the EPA or the State air agency has made a finding that such emissions are a significant contributor to the $PM_{2.5}$ air quality problem (40 CFR 93.102(b)(3)). The South Coast Air Quality Management District's (SCAQMD) 2007 Air Quality Management Plan (AQMP) identified reentrained road dust as significant source of $PM_{2.5}$ in the area's emission budget. In addition, the EPA has published guidance on the use of AP-42 for reentrained road dust for State Implementation Plan (SIP) development and conformity (January 2011); therefore, reentrained $PM_{2.5}$ is considered in this analysis.

Secondary particles formed through $PM_{2.5}$ and PM_{10} precursor emissions from a transportation project take several hours to form in the atmosphere, giving emissions time to disperse beyond the immediate project area of concern for localized analyses; therefore, they were not considered in this hot-spot analysis. Secondary emissions of $PM_{2.5}$ and PM_{10} are considered part of the regional emission analysis prepared for the conforming RTP and FTIP.

According to the project schedule, construction will begin in early 2013 and be completed within one year. Because construction will last 1 year, it does not meet the conformity rule's criterion for requiring inclusion of construction emissions in regional and project-level conformity analysis (40 CFR 93.123(c)(5)). Therefore, construction-related emissions may be considered temporary; and any

construction-related $PM_{2.5}$ and PM_{10} emissions due to this project were not included in this hot-spot analysis. This project will comply with the South Coast Air Quality Management District (SCAQMD) Fugitive Dust Rules for fugitive dust during construction of this project. In addition, per Transportation Conformity Rule 93.117, the project will be required to comply with any $PM_{2.5}$ and PM_{10} control measures in the SIP. Excavation, transportation, placement, and handling of excavated soils will result in no visible dust migration. A water truck or tank will be available within the project limits at all times to suppress and control the migration of fugitive dust from earthwork operations.

Analysis Method

This analysis has been prepared according to the 2006 EPA Qualitative Hot Spot Guidance, which estimates the likely effect of a project on localized pollutant concentrations based on emission analysis. According to hot-spot methodology, estimates of future localized $PM_{2.5}$ and PM_{10} pollutant concentrations need to be determined. This analysis establishes that the local air quality is consistent with the 2007 AQMP by comparing the locally monitored $PM_{2.5}$ and PM_{10} concentrations to the AQMP's projections. Additionally, the impacts of the project on the regional $PM_{2.5}$ and PM_{10} emissions and the likelihood of these impacts interacting with the ambient $PM_{2.5}$ and PM_{10} levels to cause hot spots are discussed.

The California Air Resources Board's (ARB) EMFAC2007 Version 2.3 (EMFAC) was used to develop emission factors for the various criteria pollutants.[1] Ordinarily, the opening year (highest emission factors) and horizon year (highest traffic volume) are the most likely to have the highest emissions. Therefore, the EMFAC model was run for the year 2015 (the traffic analysis year that represents the conditions soon after the anticipated opening of the project) and build-out year 2035. EMFAC has a variety of user options that allow the user to analyze on-road emissions under different conditions. For the proposed project, the following options were used:

- Operation Parameters
    - Geographic area chosen: Orange County.
    - Calendar Year: 2015 and 2035 analysis years for the No Build and Build Alternatives.
    - Season: Annual average season was used, which represents an average of all monthly inventories.
- Modes
    - The model was run in the "EMFAC" mode to generate emission factors in grams of pollutant emitted per vehicle activity (grams per vehicle mile travelled [VMT] and grams/hour).

Reentrained Dust. EMFAC2007 does not estimate road dust emissions; therefore, the emission rates listed in Section 13.2.1 of EPA's January 2011 AP-42 were used to calculate the road dust $PM_{2.5}$ and PM_{10} emissions.

[1] EMFAC2011 was released by ARB on September 19, 2011. However, the EPA has not yet completed its review of EMFAC2011 and made it available for conformity use.

Data Considered

The closest air monitoring station to the project area that monitors particulate matter is the Mission Viejo Station, located at 26081 Via Pera. This station monitors $PM_{2.5}$ and PM_{10} concentrations. This monitoring station is located approximately 2 miles northeast of I-5 and 3 miles southwest of the existing SR-241. The proposed extension of SR-241 will be located approximately 2.5 to 3.5 miles from I-5. Therefore, the air quality concentrations monitored at the Mission Viejo Station are representative of the conditions within the project area.

Trends in Baseline $PM_{2.5}$ Concentrations. The monitored $PM_{2.5}$ concentrations at the Mission Viejo station are shown in Table A. These data show that neither the 24-hour $PM_{2.5}$ NAAQS (35 $\mu g/m^3$) nor the annual average $PM_{2.5}$ NAAQS (15 $\mu g/m^3$) has exceeded the Federal standard within the past 6 years. The 23.3 $\mu g/m^3$ level measured in 2011 is 33 percent below the Federal 24-hour standard. The 8.6 $\mu g/m^3$ level measured in 2011 is 43 percent below the Federal annual standard.

Table A: Ambient $PM_{2.5}$ Monitoring Data ($\mu g/m^3$)

	2006	2007	2008	2009	2010	2011
Mission Viejo – Via Pera Air Quality Monitoring Station						
3-year average 98th percentile	31.9	30.9	29.5	28.8	22.7	23.3
Exceeds Federal 24-hour standard (35 $\mu g/m^3$)?	No	No	No	No	No	No
3-year National annual average	11.2	10.8	10.8	10.2	9.2	8.6
Exceeds Federal annual average standard (15 $\mu g/m^3$)?	No	No	No	No	No	No

Source: ARB Web site: http://www.arb.ca.gov/adam/, October 2012.
$\mu g/m^3$ = micrograms per cubic meter

Trends in Baseline PM_{10} Concentrations. The PM_{10} concentrations monitored at the Mission Viejo station are shown in Table B. The Federal 24-hour PM_{10} air quality standard (150 $\mu g/m^3$) was not exceeded between 2006 and 2011.

Table B: Ambient PM_{10} Monitoring Data ($\mu g/m^3$)

	2006	2007	2008	2009	2010	2011
Mission Viejo – Via Pera Air Quality Monitoring Station						
First Highest	57	74	42	56	34	48
Second Highest	37	55	42	41	31	39
Third Highest	35	52	39	41	31	32
Fourth Highest	34	37	39	35	30	31
No. of days above National 24-hour standard (150 $\mu g/m^3$)	0	0	0	0	0	0

Source: ARB Web site: http://www.arb.ca.gov/adam/, October 2012.
$\mu g/m^3$ = micrograms per cubic meter

The 2007 AQMP (SCAQMD) reports that since the Federal annual PM_{10} standard has been revoked, the Basin is expected to be declared in attainment for the 24-hour Federal PM_{10} standard since 2000. Table V-3-1 in the 2007 AQMP lists the projected 24-hour PM_{10} concentrations at various stations within the Basin. It is estimated that the 24-hour concentration in Mission Viejo will be 42 $\mu g/m^3$ by 2015, 72 percent below the Federal standard.

Traffic Changes Due to the Proposed Project

The proposed project is a highway extension project. Based on the Traffic Analysis (Stantec, August 2012), the proposed project would increase the traffic volumes along SR-241 while reducing traffic volumes along Antonio Parkway and I-5. Tables C and D list the ADT and truck ADT volumes along SR-241, I-5, and the local roadways for the 2015 and 2035 conditions, respectively. Tables E and F list the increase in ADT and truck ADT for each build alternative for the 2015 and 2035 conditions, respectively. The largest increase in ADT due to the proposed project is 31,000 vehicles per day. The largest increase in truck ADT due to the proposed project is 930 vehicles per day. Therefore, a vehicle emission analysis was prepared to determine the proposed project's effect on the region attaining the Federal $PM_{2.5}$ and PM_{10} air quality standards.

Daily Vehicle Emission Changes Due to the Proposed Project

A supplemental traffic analysis (Stantec, October 2012) calculated the daily VMT and daily vehicle hours traveled (VHT) for all of the vehicle trips within the project area. The VMT/VHT data along with a map of the project study area are included in Appendix A. This traffic data, in conjunction with the EMFAC2007 emission model, was used to calculate the $PM_{2.5}$ and PM_{10} exhaust, tire wear, and brake wear emissions for each of the project alternatives. EMFAC2007 does not estimate road dust emissions; therefore, the emission rates listed in Section 13.2.1 of EPA's AP-42 were used to calculate the road dust $PM_{2.5}$ and PM_{10} emissions. The $PM_{2.5}$ emissions are presented in Tables G and I for the 2015 and 2035 conditions, respectively. The PM_{10} emissions are presented in Tables H and J for the 2015 and 2035 conditions, respectively. As shown, implementation of the proposed project would result in a very small decrease in the $PM_{2.5}$ and PM_{10} emissions within the project study area. The results of the modeling are included in Appendix B.

CONCLUSION

Transportation conformity is required under Section 176(c) of the CAA to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP. Conformity for the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. As required by the transportation conformity regulation, this qualitative $PM_{2.5}$ and PM_{10} hot-spot analysis demonstrates that this project meets the CAA conformity requirements to support State and local air quality goals with respect to potential localized air quality impacts.

This Technical Addendum upholds the conclusion of the PM Conformity Hot Spot Analysis Project Summary Form submitted at the front of this report: the Tesoro Extension is not a Project of Air Quality Concern.

Table C: 2015 Traffic Volumes

Roadway Link	No Build		Build	
	ADT	Truck ADT	ADT	Truck ADT
SR-241 north of Oso Parkway	12,000	360	19,000	570
SR-241 south of Oso Parkway (project)	0	0	13,000	390
Oso Parkway west of SR-241	31,500	945	27,000	810
Antonio Parkway between Oso Parkway and Crown Valley Parkway	47,000	1,410	39,000	1,170
Antonio Parkway between Crown Valley Parkway and Cow Camp Road	44,000	1,320	36,500	1,095
Antonio Parkway between Cow Camp Road and Ortega Highway	35,000	1,050	37,000	1,110
Ortega Highway west of Antonio Parkway	38,000	4,560	38,000	4,560
Ortega Highway east of Antonio Parkway	17,000	1,190	17,000	1,190
La Pata south of Ortega Highway	23,000	1,610	24,000	1,680
Cow Camp Road	34,000	1,020	35,000	1,050
I-5 between Oso Parkway and Crown Valley Parkway	310,000	12,400	307,000	12,280
I-5 between Crown Valley Parkway and SR-73	274,000	10,960	271,000	10,840
I-5 between SR-73 and Junipero Serra	296,000	11,840	292,000	11,680
I-5 between Junipero Serra and Ortega Highway	287,000	11,480	285,000	11,400

Source: LSA Associates, Inc. and Stantec (August 2012).

Table D: 2035 Traffic Volumes

Roadway Link	No Build		Build	
	ADT	Truck ADT	ADT	Truck ADT
SR-241 north of Oso Parkway	15,000	450	32,000	960
SR-241 south of Oso Parkway (project)	0	0	31,000	930
Oso Parkway west of SR-241	34,500	1,035	32,500	975
Antonio Parkway between Oso Parkway and Crown Valley Parkway	41,000	1,230	29,000	870
Antonio Parkway between Crown Valley Parkway and Cow Camp Road	54,500	1,635	37,500	1,125
Antonio Parkway between Cow Camp Road and Ortega Highway	39,000	1,170	42,000	1,260
Ortega Highway west of Antonio Parkway	43,500	5,220	42,000	5,040
Ortega Highway east of Antonio Parkway	13,000	910	11,000	770
La Pata south of Ortega Highway	39,000	2,730	42,000	2,940
Cow Camp Road	68,000	2,040	58,000	1,740
I-5 between Oso Parkway and Crown Valley Parkway	384,000	15,360	376,000	15,040
I-5 between Crown Valley Parkway and SR-73	335,000	13,400	330,000	13,200
I-5 between SR-73 and Junipero Serra	367,000	14,680	360,000	14,400
I-5 between Junipero Serra and Ortega Highway	356,000	14,240	350,000	14,000

Source: LSA Associates, Inc. and Stantec (August 2012).

Table E: 2015 Change in Traffic Volumes

Roadway Link	Build – No Build	
	ADT	Truck ADT
SR-241 north of Oso Parkway	7,000	210
SR-241 south of Oso Parkway (project)	13,000	390
Oso Parkway west of SR-241	-4,500	-135
Antonio Parkway between Oso Parkway and Crown Valley Parkway	-8,000	-240
Antonio Parkway between Crown Valley Parkway and Cow Camp Road	-7,500	-225
Antonio Parkway between Cow Camp Road and Ortega Highway	2,000	60
Ortega Highway west of Antonio Parkway	0	0
Ortega Highway east of Antonio Parkway	0	0
La Pata south of Ortega Highway	1,000	70
Cow Camp Road	1,000	30
I-5 between Oso Parkway and Crown Valley Parkway	-3,000	-120
I-5 between Crown Valley Parkway and SR-73	-3,000	-120
I-5 between SR-73 and Junipero Serra	-4,000	-160
I-5 between Junipero Serra and Ortega Highway	-2,000	-80

Source: LSA Associates, Inc. and Stantec (August 2012).

Table F: 2035 Change in Traffic Volumes

Roadway Link	Build – No Build	
	ADT	Truck ADT
SR-241 north of Oso Parkway	17,000	510
SR-241 south of Oso Parkway (project)	31,000	930
Oso Parkway west of SR-241	-2,000	-60
Antonio Parkway between Oso Parkway and Crown Valley Parkway	-12,000	-360
Antonio Parkway between Crown Valley Parkway and Cow Camp Road	-17,000	-510
Antonio Parkway between Cow Camp Road and Ortega Highway	3,000	90
Ortega Highway west of Antonio Parkway	-1,500	-180
Ortega Highway east of Antonio Parkway	-2,000	-140
La Pata south of Ortega Highway	3,000	210
Cow Camp Road	-10,000	-300
I-5 between Oso Parkway and Crown Valley Parkway	-8,000	-320
I-5 between Crown Valley Parkway and SR-73	-5,000	-200
I-5 between SR-73 and Junipero Serra	-7,000	-280
I-5 between Junipero Serra and Ortega Highway	-6,000	-240

Source: LSA Associates, Inc. and Stantec (August 2012).

Table G: 2015 $PM_{2.5}$ Emissions (lbs/day)

Source	2015	
	No Build	Build
Exhaust	489	489
Tire Wear	65	65
Brake Wear	163	163
Reentrained	1,117	1,117
Total	1,834	1,834
% Change	-	0.0%

Source: LSA Associates, Inc., October 2012.
lbs/day = pounds per day

Table H: 2015 PM_{10} Emissions (lbs/day)

Source	2015	
	No Build	Build
Exhaust	521	521
Tire Wear	261	261
Brake Wear	424	424
Reentrained	4,469	4,469
Total	5,675	5,675
% Change	-	0.0%

Source: LSA Associates, Inc., October 2012.
lbs/day = pounds per day

Table I: 2035 $PM_{2.5}$ Emissions (lbs/day)

Source	2035	
	No Build	Build
Exhaust	552	552
Tire Wear	79	79
Brake Wear	197	197
Reentrained	1,353	1,351
Total	2,181	2,179
% Change	-	-0.1%

Source: LSA Associates, Inc., October 2012.
lbs/day = pounds per day

Table J: 2035 PM_{10} Emissions (lbs/day)

Source	2035	
	No Build	Build
Exhaust	592	591
Tire Wear	355	355
Brake Wear	513	512
Reentrained	5,410	5,405
Total	6,870	6,863
% Change	-	-0.1%

Source: LSA Associates, Inc., October 2012.
lbs/day = pounds per day

It is not expected that changes to $PM_{2.5}$ and PM_{10} emissions levels associated with the proposed project would result in new violations of the Federal air quality standards, increase the frequency or severity of any existing violations, or delay timely attainment of the $PM_{2.5}$ and PM_{10} NAAQS for the following reasons:

- Through interagency consultation, SCAG's transportation conformity working group found that FTC-S as a whole met conformity requirements in July 2006. The Tesoro Extension portion of the project is consistent with this original conformity determination, as this technical addendum finds that the Tesoro Extension meets conformity hot spot requirements considered both separately and as part of the entire SR-241 toll road project
- The Tesoro Extension maintains the same number of lanes, alignment and points of ingress and egress as assumed in the conformity modeling for ORA052 in its entirety in the July 2006 qualitative hot spot report.
- Based on the ambient air quality monitoring, without the proposed project, the 24-hour $PM_{2.5}$ concentrations within the project area are 33 percent below the Federal standard.
- Based on the ambient air quality monitoring, without the proposed project, the annual average $PM_{2.5}$ concentrations within the project area are 43 percent below the Federal standard.
- Based on the projected PM_{10} concentrations listed in the 2007 AQMP, without the proposed project, the 24-hour PM_{10} concentrations would be 72 percent below the Federal standard by 2015.
- When compared to the No Build conditions, the proposed project would result in a very small decrease in regional $PM_{2.5}$ and PM_{10} emissions.

For these reasons, future new or worsened $PM_{2.5}$ and PM_{10} violations of any standards are not anticipated; therefore, the project meets the conformity hot-spot requirements in 40 CFR 93-116 and 93-123 for both $PM_{2.5}$ and PM_{10}.

REFERENCES

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APPENDIX A

SUPPLEMENTAL TRAFFIC DATA

Table 1

2010 Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT)

VEHICLE-MILES-TRAVELED					
2010 - BASE YEAR MODELED					
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	1,159,437.6	1,751,494.5	1,891,163.1	1,347,735.1	6,149,830.3
Major	620,373.3	894,826.4	676,188.2	447,749.9	2,639,137.8
Primary	396,205.4	580,406.7	414,927.5	266,508.1	1,658,047.7
Secondary	114,912.6	178,303.7	124,089.0	74,319.4	491,624.7
Collector	49,297.9	74,688.5	56,545.8	35,858.4	216,390.6
Centroid Connector	198,564.9	299,315.0	253,656.3	158,417.0	909,953.2
HOV	158,993.2	235,562.8	236,746.4	171,390.5	802,692.9
Ramp	38,941.2	56,030.8	49,054.3	33,278.2	177,304.5
Tollway	240,676.8	319,206.0	133,124.8	85,471.4	778,479.0
Total	**2,977,402.9**	**4,389,834.4**	**3,835,495.4**	**2,620,728.0**	**13,823,460.7**

VEHICLE-HOURS-TRAVELED (VHT)					
2010 - BASE YEAR MODELED					
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	17,122.3	25,657.6	25,209.9	17,965.4	85,955.2
Major	14,762.3	21,285.6	15,978.8	10,573.4	62,600.1
Primary	10,383.2	15,218.4	10,762.4	6,891.5	43,255.5
Secondary	3,366.9	5,209.3	3,617.2	2,167.2	14,360.6
Collector	1,476.3	2,265.3	1,707.7	1,075.6	6,524.9
Centroid Connector	13,237.6	19,954.3	16,910.4	10,561.1	60,663.4
HOV	2,339.9	3,438.7	3,155.9	2,284.5	11,219.0
Ramp	1,298.2	1,867.8	1,635.1	1,109.3	5,910.4
Tollway	3,543.9	4,575.9	1,775.7	1,139.9	11,035.4
Total	**67,530.5**	**99,472.9**	**80,753.1**	**53,767.9**	**301,524.4**

Table 2

2015 Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT)

VEHICLE-MILES-TRAVELED										
2015 NO-PROJECT						**2015 WITH-PROJECT (TESORO EXTENSION)**				
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	1,189,534.7	1,801,964.0	1,985,518.0	1,397,063.5	6,374,080.2	1,181,844.7	1,788,504.1	1,979,398.9	1,394,311.6	6,344,059.3
Major	680,667.6	990,381.0	751,250.1	489,988.1	2,912,286.8	670,639.1	974,746.8	741,202.7	484,295.9	2,870,884.5
Primary	428,850.7	635,590.7	453,053.6	284,378.9	1,801,873.9	428,945.8	636,009.4	453,990.0	284,831.6	1,803,776.8
Secondary	120,247.7	188,881.6	133,139.6	77,979.1	520,248.0	118,675.9	186,373.3	132,645.6	77,655.6	515,350.4
Collector	56,567.9	87,219.9	67,018.2	40,890.3	251,696.3	56,484.8	87,034.9	67,257.4	41,046.7	251,823.8
Centroid Connector	209,644.1	318,891.0	270,006.3	167,420.3	965,961.7	209,619.3	318,845.9	270,001.2	167,416.9	965,883.3
HOV	183,058.1	269,347.1	283,754.2	198,754.6	934,914.0	180,806.9	269,508.1	284,428.1	198,981.2	933,724.3
Ramp	39,769.3	57,597.3	50,375.9	33,978.8	181,721.3	39,709.5	57,595.7	50,426.2	33,976.0	181,707.4
Tollway	257,434.2	348,997.5	145,809.0	89,210.3	841,451.0	279,350.7	382,293.7	159,112.3	96,163.2	916,919.9
Total	**3,165,774.3**	**4,698,870.1**	**4,139,924.9**	**2,779,663.9**	**14,784,233.2**	**3,166,076.6**	**4,700,911.9**	**4,138,462.4**	**2,778,678.7**	**14,784,129.6**

VEHICLE-HOURS-TRAVELED										
2015 NO-PROJECT						**2015 WITH-PROJECT (TESORO EXTENSION)**				
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	17,564.9	26,396.5	26,476.5	18,629.2	89,067.1	17,449.5	26,198.3	26,394.9	18,592.6	88,635.3
Major	15,995.5	23,256.2	17,534.8	11,449.2	68,235.7	15,829.9	23,000.7	17,355.6	11,346.9	67,533.1
Primary	11,149.4	16,535.3	11,652.2	7,297.0	46,633.9	11,146.4	16,538.4	11,673.3	7,306.7	46,664.8
Secondary	3,518.7	5,515.5	3,881.6	2,274.4	15,190.2	3,473.8	5,443.1	3,866.3	2,264.7	15,047.9
Collector	1,750.8	2,732.7	2,103.0	1,267.8	7,854.3	1,753.6	2,734.5	2,113.4	1,274.1	7,875.6
Centroid Connector	13,976.3	21,259.5	18,000.4	11,161.4	64,397.6	13,974.6	21,256.5	18,000.1	11,161.1	64,392.3
HOV	2,694.1	3,934.4	3,782.7	2,649.2	13,060.4	2,661.6	3,935.9	3,791.6	2,652.2	13,041.3
Ramp	1,325.6	1,919.8	1,679.2	1,132.6	6,057.2	1,323.7	1,919.8	1,680.9	1,132.5	6,056.9
Tollway	3,794.2	5,005.0	1,945.0	1,189.8	11,934.0	4,121.7	5,489.6	2,122.4	1,282.6	13,016.3
Total	**71,769.7**	**106,554.9**	**87,055.4**	**57,050.6**	**322,430.6**	**71,734.7**	**106,516.8**	**86,998.5**	**57,013.4**	**322,263.4**

Table 4-4

2035 Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT)

VEHICLE-MILES-TRAVELED (VMT)										
2035 No-Project						2035 With Project (Tesoro Extension)				
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	1,431,133.0	2,165,444.0	2,490,226.8	1,695,743.4	7,782,547.2	1,413,176.4	2,141,072.4	2,475,384.8	1,687,945.2	7,717,578.8
Major	710,908.5	1,033,281.2	800,502.4	529,562.4	3,074,254.5	689,265.2	1,003,375.0	779,776.1	515,843.8	2,988,260.1
Primary	473,230.8	707,209.6	505,869.6	310,374.7	1,996,684.7	469,883.1	701,558.2	505,055.3	309,997.3	1,986,493.9
Secondary	144,347.6	231,206.7	165,497.6	93,551.1	634,603.0	140,631.3	224,041.8	163,822.2	93,067.2	621,562.5
Collector	222,187.0	333,119.4	232,059.4	138,260.8	925,626.6	218,109.8	326,561.5	229,775.3	137,389.8	911,836.4
Centroid Connector	246,988.4	377,301.0	320,414.8	197,596.2	1,142,300.4	246,959.5	377,332.2	320,428.2	197,609.1	1,142,329.0
HOV	209,232.8	313,571.4	333,100.4	234,142.1	1,090,046.7	203,671.2	306,622.4	332,114.1	233,654.4	1,076,062.1
Ramp	43,337.0	63,113.4	56,875.7	38,906.5	202,232.6	43,653.6	63,584.2	57,358.2	39,148.1	203,744.1
Tollway	317,101.6	444,334.0	184,523.3	105,007.3	1,050,966.2	368,265.4	522,102.5	218,379.7	123,736.8	1,232,484.4
Total	**3,798,466.6**	**5,668,580.7**	**5,089,070.0**	**3,343,144.5**	**17,899,261.8**	**3,793,615.5**	**5,666,250.2**	**5,082,093.9**	**3,338,391.7**	**17,880,351.3**

VEHICLE-HOURS-TRAVELED (VHT)										
2035 No-Project						2035 With Project (Tesoro Extension)				
Facility Type	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT	AM Peak Period	PM Peak Period	Mid-Day Period	Night-Time Period	ADT
Freeway	21,118.5	31,698.6	33,205.0	22,611.2	108,633.3	20,852.1	31,339.8	33,007.3	22,507.6	107,706.8
Major	16,770.9	24,388.6	18,786.3	12,413.2	72,359.0	16,328.5	23,774.8	18,351.8	12,122.1	70,577.2
Primary	12,380.8	18,518.5	13,129.7	8,042.4	52,071.4	12,291.8	18,374.1	13,109.7	8,033.0	51,808.6
Secondary	4,257.0	6,803.6	4,874.6	2,764.2	18,699.4	4,155.4	6,604.0	4,826.3	2,748.6	18,334.3
Collector	5,714.2	8,648.6	6,155.0	3,637.1	24,154.9	5,593.3	8,463.0	6,082.7	3,605.1	23,744.1
Centroid Connector	16,465.8	25,153.5	21,361.0	13,173.1	76,153.4	16,463.9	25,155.4	21,361.9	13,173.9	76,155.1
HOV	3,080.1	4,580.6	4,438.6	3,120.0	15,219.3	2,997.2	4,478.4	4,425.4	3,113.5	15,014.5
Ramp	1,444.5	2,103.8	1,895.9	1,296.9	6,741.1	1,455.1	2,119.4	1,911.9	1,304.9	6,791.3
Tollway	4,670.5	6,373.6	2,461.4	1,400.5	14,906.0	5,390.3	7,453.0	2,912.9	1,650.3	17,406.5
Total	**85,902.1**	**128,269.4**	**106,307.5**	**68,458.6**	**388,937.6**	**85,527.7**	**127,761.9**	**105,989.9**	**68,259.0**	**387,538.5**

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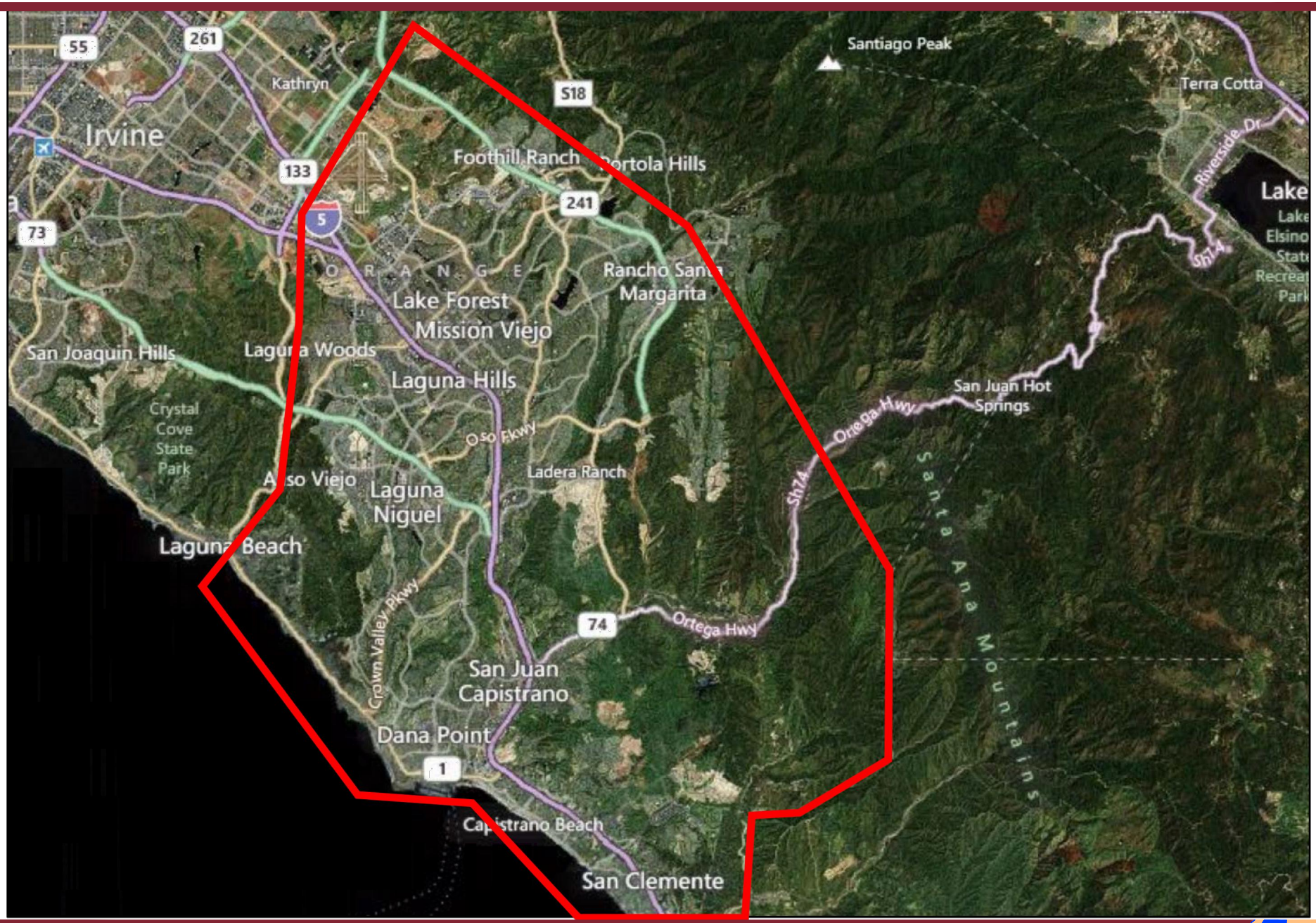

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VMT Extraction Study Area

Figure 4-8

APPENDIX B

$PM_{2.5}$ AND PM_{10} EMISSIONS

SR-241 Tesoro Extension

Alternative	Baseline Condition	Baseline VMT	Baseline VHT	Baseline Avg Speed	Alternative VMT	Alternative VHT	Alternative Avg Speed
2012 Existing	Existing	13,823,461	301,524	45.85	N/A	N/A	N/A

Pollutant	Baseline Rate (g/mile)	Baseline Emissions (lb)
PM10 Exhaust	0.017	518
PM10 Tire Wear	0.008	244
PM10 Brake Wear	0.013	396
PM10 Reentrained	0.137	4,178
PM2.5 Exhaust	0.016	488
PM2.5 Tire Wear	0.002	61
PM2.5 Brake Wear	0.005	152
PM2.5 Reentrained	0.034	1,045

Alternative	Baseline Condition	Baseline VMT	Baseline VHT	Baseline Avg Speed	Alternative VMT	Alternative VHT	Alternative Avg Speed
2015 Build	2015 No Build	14,784,233	322,431	45.85	14,784,130	322,263	45.88

Pollutant	Baseline Rate (g/mile)	Baseline Emissions (lb)	Alternative Rate (g/mile)	Alternative Emissions (lb)	Project Increase (lb)
PM10 Exhaust	0.016	521	0.016	521	0
PM10 Tire Wear	0.008	261	0.008	261	0
PM10 Brake Wear	0.013	424	0.013	424	0
PM10 Reentrained	0.137	4,469	0.137	4,469	0
PM2.5 Exhaust	0.015	489	0.015	489	0
PM2.5 Tire Wear	0.002	65	0.002	65	0
PM2.5 Brake Wear	0.005	163	0.005	163	0
PM2.5 Reentrained	0.034	1,117	0.034	1,117	0

Alternative	Baseline Condition	Baseline VMT	Baseline VHT	Baseline Avg Speed	Alternative VMT	Alternative VHT	Alternative Avg Speed
2035 Build	2035 No Build	17,899,262	388,938	46.02	17,880,351	387,539	46.14

Pollutant	Baseline Rate (g/mile)	Baseline Emissions (lb)	Alternative Rate (g/mile)	Alternative Emissions (lb)	Project Increase (lb)
PM10 Exhaust	0.015	592	0.015	591	-1
PM10 Tire Wear	0.009	355	0.009	355	0
PM10 Brake Wear	0.013	513	0.013	512	-1
PM10 Reentrained	0.137	5,410	0.137	5,405	-6
PM2.5 Exhaust	0.014	552	0.014	552	-1
PM2.5 Tire Wear	0.002	79	0.002	79	0
PM2.5 Brake Wear	0.005	197	0.005	197	0
PM2.5 Reentrained	0.034	1,353	0.034	1,351	-1